THE METROPOLITAN WATER DISTRICT OF OF SOUTHERN CALIFORNIA

COLORADO RIVER AQUEDUCT

THE DISTRICT—ITS GOVERNMENT, BOUNDARIES, PURPOSE, POPULATION, AND FINANCIAL RESOURCES. WATER RIGHTS. SURVEYS, PLANS AND ESTIMATES. CONSULTING BOARDS. FUNDS REQUIRED. PLAN OF REPAYMENT. OFFICERS AND DIRECTORS.

Nature and Composition of District

The Metropolitan Water District is a public corporation of the State of California, organized in 1928 under authority of the State Metropolitan Water District Act of 1927. It is composed of the following thirteen member cities: Anaheim, Beverly Hills, Burbank, Compton, Fullerton, Glendale, Long Beach, Los Angeles, Pasadena, San Marino, Santa Ana, Santa Monica and Torrance.

Purpose

The District was organized for the purpose of supplying its member cities with water for domestic and industrial uses and incidentally to provide a means of creating a water supply for such surrounding areas as may find it advantageous to join in the enterprise.

Government

The District is governed by a board of directors composed of at least one director from each member city, the voting power being distributed among the member cities upon the basis of one vote for each ten million dollars assessed valuation, with the provision that no one city shall have more than 50% of the voting strength of the board. The members of the board of directors are appointed by the executive officers of the member cities with the consent and approval of the governing bodies thereof. The District has authority to acquire, construct and operate a water works system, do all the things incidental to these functions, and sell water and levy taxes to provide funds for carrying on its business and for paying interest and principal of any bonded indebtedness.

Environment

The region within which the cities of the Metropolitan Water District are situated embraces the fertile plain surrounding the city of Los Angeles and extending to Redlands on the east and Newport Beach on the south. There are 2,200 square miles or 1,400,000 acres of first class habitable lands within this basin. Citrus fruits and semi-tropical vegetation grow luxuriantly. The region is very attractive as a place of residence and as the site of an intense industrial development. Labor is plentiful at moderate prices and foodstuffs are abundant. The oil fields of Southern California provide an abundant and cheap supply of fuel, and the Los Angeles harbor is an open door to the raw material markets of the world.

Financial Resources

The District at the present time has no bonded or other indebtedness. Current operating expenses are met by a small tax levy. The total population of the thirteen member cities in 1930 was 1,665,833, and the total assessed valuation was $2,410,610,355 distributed as shown in the accompanying table.

Population and Assessed Value of District

City	Population, 1930	Assessed Value, 1930
Anaheim	10,995	$ 8,188,260
Beverly Hills	17,429	64,448,585
Burbank	16,662	25,951,035
Compton	12,516	10,702,885
Fullerton	10,860	12,666,140
Glendale	62,736	73,472,110
Long Beach	142,032	189,399,040
Los Angeles	1,238,048	1,788,834,265
Pasadena	76,086	114,574,405
San Marino	3,730	14,885,855
Santa Ana	30,322	21,982,015
Santa Monica	37,146	59,618,185
Torrance	7,271	25,887,575
Total	1,665,833	$2,410,610,355

The above figures are for the cities now in the District. These assessed valuations do not include the value of solvent credits, stocks, bonds, notes, etc., the operative property of public utilities and the property of public corporations exempt from taxation. The Colorado River acqueduct is the only source of additional supply for the entire basin previously described and is being so designed that all potential demands can be supplied up to the limit of its capacity. The population of the basin in 1930 was 2,491,000 and its assessed valuation was $3,581,261,000.

Past and Predicted Growth

This region has experienced a remarkable era of expansion during the past few decades. Growth has been particularly rapid since about 1910. There is every reason to expect that development will continue until the natural resources of the region are absorbed. Past and estimated growths are as shown on the accompanying table.

Past and Predicted Growths

Year	Present Member Cities Population	Present Member Cities Assessed Value	Entire Basin Population	Entire Basin Assessed Value
	(U. S. Census and Assessment Records)			
1890	62,322	$	140,540	$
1900	123,294		235,820	
1910	391,595	284,000,000	668,038	529,992,000
1920	737,483	668,000,000	1,085,000	995,206,000
1930	1,665,833	2,431,397,250	2,491,000	3,581,261,000
	Predicted for Future			
1940	2,500,900	3,646,518,000	3,717,000	5,345,000,000
1950	3,360,200	4,933,826,000	4,940,000	7,104,000,000
1960	4,119,500	6,074,114,000	5,935,000	8,535,000,000
1970	4,824,300	7,131,520,000	6,860,000	9,865,000,000
1980	5,310,500	7,921,031,000	7,525,000	10,821,000,000

Present Water Resources

The region is naturally semiarid, the mean annual rainfall being approximately 15 inches. The mountain areas tributary to the basin are not large. Natural stream flow is limited and even with careful conservation is inadequate for the needs of the community.

The areas immediately outside of the encircling hills are arid and yield practically no runoff. It is therefore necessary in the development of the region to go great distances to secure the waters needed to supplement local supplies.

The present Owens River aqueduct of the city of Los Angeles, extending approximately 250 miles northward to tap the snow banks of the High Sierras, is capable of delivering 450 second-feet of water into the valley, or such smaller flow as may be available at the source of supply.

Present Deficiencies in Supply

The entire amount of water being developed and used in the metropolitan area for all purposes and from local and outside sources is a little more than 1,000,000 acre feet per year. This amount exceeds the average yield of the sources from which it is being drawn by an appreciable percentage. This excess of use over normal supply is made possible by the fact that much of the water is derived from wells driven into the immense gravel beds underlying the area, which were filled with water prior to the settlement of California.

Many of these wells have been over-pumped until they have gone dry, leaving their owners without a water supply. Unless this condition is promptly relieved, growth within the metropolitan area must cease and retrogression is inevitable. Some further outside source of supply must be made available. At least double the present supply will be needed within the readily predictable future.

The Colorado River as a New Source of Supply

Opportunity for the development of the needed supply is being created by the construction, by the U. S. Government, of the Hoover dam on the Colorado River. There is available no other source of supply suitable in quality and quantity and the people of the metropolitan area have no alternative but to undertake this great water supply project. Fortunately, Colorado River water can be brought into the District at a feasible cost.

Water Rights and Power Contracts

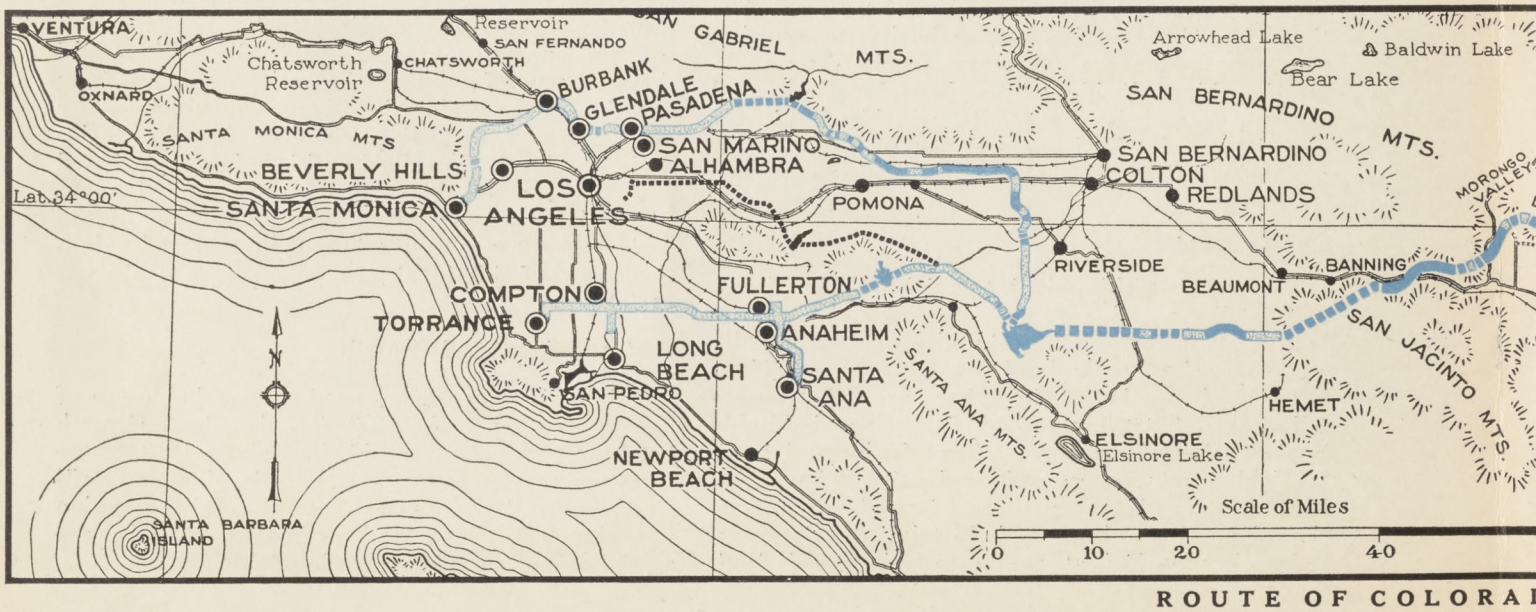
The District has entered into definite agreements with other prospective users of Colorado River water in California as to the division of the waters to be allocated to California. These agreements concede to the District the right to an annual diversion of 1,100,000 acre feet.

The District has accordingly filed on a diversion of 1,100,000 acre feet annually from the Colorado River at the Parker dam site, under the laws of the State of California, and has entered into a contract with the U. S. Government for the delivery of this amount of water from the Hoover reservoir.

The District has likewise reached an agreement with other prospective users in regard to the division of power to be generated at Boulder Canyon and has entered into a contract with the Government for the power that will be required to pump Colorado River water over the mountains and into the District area.

Investigations of Plans

The project has been investigated, designed and estimated by a competent staff of hydraulic engi-



ROUTE OF COLORA

neers. Every precaution has been taken to assure the selection of the best location and development along the most feasible lines. The route selected is the best and most practicable available, and the approved plans do not involve any new or untried engineering expedients or any structures of unusual size or character. There is ample precedent for every operation, and the hazards of construction are low.

Consulting Boards

Work of the District's staff has been reinforced by the employment of expert consultants on all difficult engineering, geological, financial and legal problems. Men of the highest professional ability have been called for this work.

Board of Review, 1929 and 1930

(Reports rendered Dec. 21, 1929 and Dec. 19, 1930)

Thaddeus Merriman, Chairman: Chief engineer, New York City Board of Water Supply.

R. R. Lyman: Consulting civil engineer, Salt Lake City; member Board of Regents, University of Utah.

A. J. Wiley: Irrigation and hydraulic engineer; Boise, Idaho. Died October 8, 1931.

Consulting Board of 1932

(Report rendered April 21, 1932)

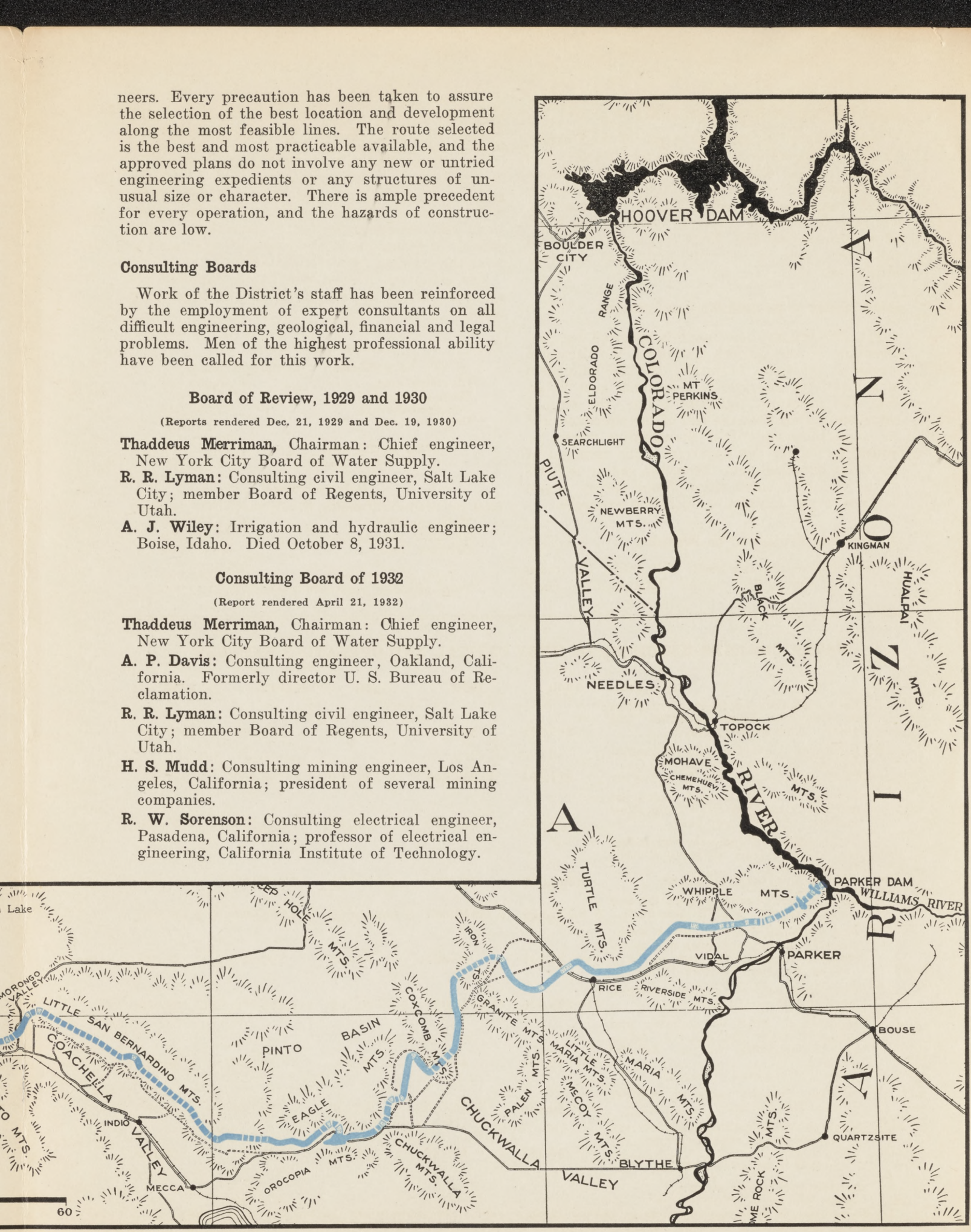
Thaddeus Merriman, Chairman: Chief engineer, New York City Board of Water Supply.

A. P. Davis: Consulting engineer, Oakland, California. Formerly director U. S. Bureau of Reclamation.

R. R. Lyman: Consulting civil engineer, Salt Lake City; member Board of Regents, University of Utah.

H. S. Mudd: Consulting mining engineer, Los Angeles, California; president of several mining companies.

R. W. Sorenson: Consulting electrical engineer, Pasadena, California; professor of electrical engineering, California Institute of Technology.



Bond Election of September, 1931

On September 29, 1931 the people of the District, by substantial majority of nearly five to one, voted a bond issue of $220,000,000 for the construction of an aqueduct. As is required by law, the legality of this issue has been established by court action. On June 2, 1932 the Supreme Court of the State of California handed down a decree declaring this bond issue to be valid and legal in every particular.

Bond Money to be used for Construction

The $220,000,000 bond issue is required for construction of the project, including the diversion works at the point of intake, the 239-mile main aqueduct from the river to a terminal near Riverside, the necessary pumping plants, the storage reservoirs required at the end of the aqueduct, and the pipe lines and other distributing works required to deliver the water from the terminal of the main aqueduct into the water supply systems of the various member cities. Bond money cannot be used to pay interest or operating expenses.

A Complete Project to be Provided

The proposed bond issue will build the main features of the project to full ultimate size. Only those portions of the pumping machinery, pipe lines and storage facilities not needed during the first years of operating will be left for future construction. The cost of these items need not be incurred until the community can well afford the additional expenditure. The proposed bond issue will provide a complete project, ready for operation, with reserve capacity for several years and capable of being quickly and cheaply expanded to meet the growing needs for water.

The estimated present and future expenditures are summarized as shown on the accompanying table.

Initial Construction

(To be performed with present issue)

Diversion dam	$ 13,058,000
Main aqueduct	143,470,000
Terminal storage	17,352,000
Delivery lines	44,964,000
Total initial cost	$218,844,000
or, in round numbers	$220,000,000

Deferred Items

(Not required until wealth of community has doubled)

Main aqueduct	$ 12,888,000
Terminal storage	13,320,000
Delivery lines	38,484,000
Total deferred cost	$ 64,692,000
Total ultimate construction cost	$283,536,000

WATER CHARGES REQUIRED TO MEET CAPITAL AND OPERATING EXPENSE

Item	Year	1940	1950	1960	1970	1980
1	Estimated demand in member cities on Colorado River aqueduct (all uses). Acre ft. per year	289,600	524,900	724,000	868,000	977,400
2	Estimated domestic and industrial demand in member cities on Colo. River aqueduct. Acre ft. per year	217,200	354,800	537,900	705,900	847,100
3	Estimated domestic and industrial demand in member cities from other sources. Acre ft. per year	406,800	516,200	530,100	544,100	557,900
4	Total estimated domestic and industrial demand from all sources. Acre ft. per year (Item 4 = Item 2 + Item 3)	624,000	871,000	1,068,000	1,250,000	1,405,000
5	Total estimated annual operation and maint. charges, Colo. R. aqueduct	$ 5,177,000	$ 5,528,000	$ 6,221,000	$ 6,908,000	$ 7,332,000
6	Sale price of Colorado River water necessary to pay operation and maintenance charges. Per 100 cu. ft. (Item 6 = Item 5 ÷ Item 1)	(a) $0.041	$0.024	$0.020	$0.018	$0.017
7	Estimated annual capital charges, interest and amortization	$10,395,000	$13,676,000	$15,500,000	$14,352,000	$11,489,000
8	Increase in rates on domestic and industrial water (all sources) necessary to pay capital charges. Per 100 cu. ft (Item 8 = Item 7 ÷ Item 4)	(b) $0.038	$0.036	$0.033	$0.026	$0.019
9	Average present rates in member cities. Per 100 cu. ft.	(c) $0.150	$0.150	$0.150	$0.150	$0.150
10	Rates in member cities after increase necessary to pay capital charges. Per 100 cu. ft. (Item 10 = Item 8 + Item 9)	(d) $0.188	$0.186	$0.183	$0.176	$0.169

(a) Wholesale rates to member cities.

(b) Increase will vary in individual cities.

(c) Average rate for small consumers; may be changed slightly in various cities when sale of Colorado River water starts.

(d) Average rate for small consumers; compare with average rate in cities of United States which is $0.18 per 100 cu. ft.

Raising Funds for Construction

The expenditure of bond money will extend over a period of approximately six years, distributed more or less as shown on the accompanying tabulation. Funds will be raised in blocks as required by the sale of serial bonds redeemable in from fifteen to fifty years from the date of issue.

Estimated Distribution of Bond Sales

		First Six Months	Second Six Months
First year	$20,000,000	$10,000,000	$10,000,000
Second year	25,000,000	10,000,000	15,000,000
Third year	35,000,000	15,000,000	20,000,000
Fourth year	50,000,000	25,000,000	25,000,000
Fifth year	65,000,000	30,000,000	35,000,000
Sixth Year	25,000,000	25,000,000	----------

Contemplated Plan of Repayment

Operating expenses, interest charges and bond redemption charges may be legally met from the proceeds of water sales or from other funds available to the various municipalities. When completed and developed the District can be made entirely self-sustaining from water revenues. Its bonds, however, will be supported by full power of taxation.

The estimated demands, the average cost of delivery and the general addition to water rates required to meet capital charges, without taxation, are shown in the accompanying tabulation. The water prices required to meet this schedule will be reasonable and well within the value of water in Southern California.

OFFICERS OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

W. P. WHITSETT - Chairman, Board of Directors
Rancher; banker
Los Angeles

FRANKLIN THOMAS - - - - - - - Vice-Chairman Board of Directors
Head, Department of Civil Engineering,
California Institute of Technology
Pasadena

S. H. FINLEY - Secretary, Board of Directors
Retired civil engineer; banker
Santa Ana

F. E. WEYMOUTH - - - - - - - - General Manager and Chief Engineer

D. W. PONTIUS - - - - - Controller
President, Pacific Electric Railway Company
Los Angeles

J. M. LUNEY - - - Assistant Controller

CHARLES H. TOLL - - - Treasurer
Vice-President, Security-First National Bank
Los Angeles

JAMES H. HOWARD - - General Counsel

BOARD OF DIRECTORS

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Rancher; banker

FRANKLIN THOMAS, Vice-Chairman - Pasadena
Head, Department of Civil Engineering,
California Institute of Technology

S. H. FINLEY, Secretary - - Santa Ana
Retired civil engineer; banker

O. E. STEWARD - - - - - Anaheim
Municipal and sanitary engineer

GEORGE R. BARKER - - Beverly Hills
Editor and Publisher, Beverly Hills Citizen

HARVEY E. BRUCE - - - - Burbank
Owner and operator, Premier Printery

C. A. DICKISON - - - - - Compton
Principal, Lafayette Junior High School,
Los Angeles; Mayor of Compton

WALTER HUMPHREYS - - - Fullerton
Manager and engineer, Waste Water Disposal
Company

SAMUEL G. McCLURE - - - Glendale
President, Evening Outlook, Santa Monica

NOWLAND M. REID - - - Long Beach
City Attorney, City of Long Beach

JOHN G. BULLOCK - - - Los Angeles
President, Bullock's, Inc.

I. EISNER - - - - - - Los Angeles
Financier

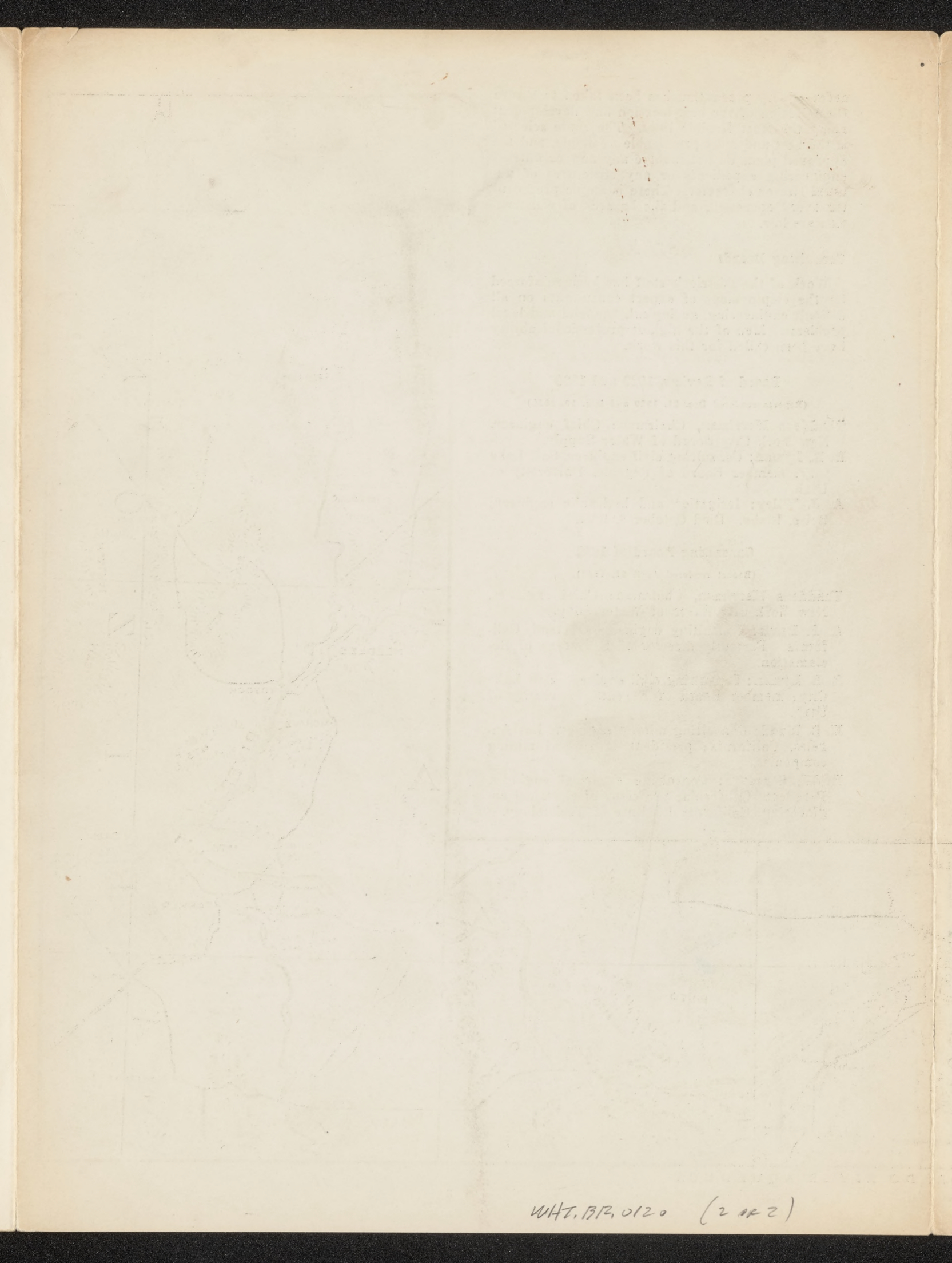
W. L. HONNOLD - - - Los Angeles
Financier; retired mining engineer

JOHN R. RICHARDS - - - Los Angeles
Capitalist

HARRY L. HEFFNER - - - San Marino
Rancher; agriculturist

ARTHUR A. WEBER - - Santa Monica
Attorney at law

JOHN DENNIS - - - - - - Torrance
Justice of the Peace, Lomita Township



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